

Claims

1. A method of manufacture of a soluble, microbiologically active and stable acrolein polymer comprising: (a) polymerising acrolein in the presence of base to form a polymer of acrolein; (b) dissolving the polymer of acrolein in an alcohol selected from monoalcohols and polyols optionally with addition of water to form an alcohol solution of the polymer of acrolein; (c) heating the alcohol solution of the polymer of acrolein; and (d) mixing base with the polymer of acrolein.
2. A method according to claim 1 wherein the acrolein comprises a co-monomer in an amount of up to 10% by weight of the total monomer composition.
3. A method according to claim 1 wherein the acrolein polymer is a homopolymer.
4. A method according to claim 1 wherein the polymer of acrolein is reacted with the alcohol in a solution of pH of no more than 7.
5. A method according to claim 1 wherein the acrolein polymer is not subject to oxidation by heating of the acrolein polymer solid in air at a temperature of at least 60°C before dissolving in the alcohol.
6. A method according to claim 1 wherein the acrolein polymer is isolated as a solid from the step of polymerisation in the presence of base and dissolved in the alcohol without a stop of oxidising the isolated solid by heating in air.
7. A method according to claim 1 wherein the acrolein polymer is dissolved in the alcohol by heating the acrolein polymer in the alcohol to a temperature in the range of from 40 to 105°C.
8. A method according to claim 1 wherein alcohol is a polyalkylene glycol.

9. A method according to claim 1 wherein the heating of the polymer of acrolein in alcohol is continued for a time sufficient so that it does not precipitate when subject to the hereinafter defined aqueous solution stability test.
- 5 10. A method according to claim 1 wherein the acrolein polymer is heated in the alcohol at a temperature in the range from 50 to 105°C, for a period in the range of from fifteen minutes to five hours.
- 10 11. A method according to claim 1 wherein the acrolein polymer dissolved in the alcohol in step (b) has an acid content of less than 1 mole of carboxyl groups per kilogram of polymer.
12. A method according to claim 11 wherein said acid content is less than 0.5 mole acid groups per kilogram of polymer.
- 15 13. A method according to claim 1 wherein the base is added to the alcohol solution following dissolution of the alcohol.
- 20 14. A method according to claim 13 wherein the pH of the resulting solution is in the range of from 7 to 9.5.
15. A method according to claim 13 wherein the pH of the resulting solution is in the range of from 7.5 to 8.5.
- 25 16. A method according to claim 1 wherein the base comprises a compound selected from the group consisting of alkali metal carbonate alkali metal hydroxide such as sodium hydroxide and mixtures thereof.
- 30 17. A method according to claim 16 wherein the base comprises sodium carbonate and/or potassium carbonate.
18. A method according to claim 1 wherein the polymer of acrolein used in the step of heating in the alcohol is in a concentration in the alcohol of from 0.5 to 50% by weight.

19. A method according to claim 18 wherein the concentration is from 0.5 to 40% by weight.

5 20. A method according to claim 1 wherein the alcohol is polyethylene glycol and in present at a concentration in the range of from 5 to 90% by weight.

21. A method according to claim 1 wherein the alcohol is a polyethylene glycol of molecular weight in the range of from 200 to 20,000.

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22. A composition prepared according to the method of any one of claims 1 to 21.

23. Use of the acrolein polymer prepared according to any one of claims 1 to 15 as an antimicrobial.

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24. A use according to claim 23 wherein the acrolein polymer provides a minimum kill concentration after storage at 40°C for no less than twenty days of less than 150 ppm against *E. coli*, at 10^4 - 10^9 cfu/mL.

20 25. A use according to claim 23 in administration to animals for treatment or prophylaxis of gastrointestinal microbiological infection.

26. A use of an acrolein polymer prepared according to claim 1 in preparation of a medicament for oral administration to animals in treatment or prevention of gastrointestinal infection.

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27. A use according to claim 26 wherein the composition is in a form for administered to animals via drinking water or via food.

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AMENDED CLAIMS

[received by the International Bureau on 17 March 2005 (17.03.05)
original claims 1 and 4 amended., remaining claims unchanged.
(1 page)]

1. A method of manufacture of a soluble, microbiologically active and stable acrolein polymer comprising the following steps in sequence: (a)
5 polymerising acrolein in the presence of base to form a polymer of acrolein; (b) dissolving the polymer of acrolein in an alcohol selected from monoalcohols and polyols optionally with addition of water to form an alcohol solution of the polymer of acrolein and providing a pH of no more than 7; (c) heating the alcohol solution of the polymer of acrolein of pH of no
10 more than 7 to form react the polymer of acrolein with the alcohol; and (d) mixing base with the polymer of acrolein.
2. A method according to claim 1 wherein the acrolein comprises a co-
15 monomer in an amount of up to 10% by weight of the total monomer composition.
3. A method according to claim 1 wherein the acrolein polymer is a homopolymer.
- 20 4. A method according to claim 1 wherein the polymer of acrolein is collected from the polymerisation reaction as a precipitate and dissolved in the alcohol.
- 25 5. A method according to claim 1 wherein the acrolein polymer is not subject to oxidation by heating of the acrolein polymer solid in air at a temperature of at least 60°C before dissolving in the alcohol.
- 30 6. A method according to claim 1 wherein the acrolein polymer is isolated as a solid from the step of polymerisation in the presence of base and dissolved in the alcohol without a step of oxidising the isolated solid by heating in air.
7. A method according to claim 1 wherein the acrolein polymer is dissolved in the alcohol by heating the acrolein polymer in the alcohol to a temperature in the range of from 40 to 105°C.
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8. A method according to claim 1 wherein alcohol is a polyalkylene glycol.